

November
2015

Third Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marín International Airport (LMMIA)

CARIBBEAN AIRPORT FACILITIES, INC.

Ref.: 354-2015.10.26 3rd Bimonthly Report CAF Monitoring Wells Sampling Report FOIA



EXECUTIVE SUMMARY

As part of the *Subsurface Investigation Plan* ("SIP"), developed on March 2012 to delineate the vertical and horizontal extent of subsurface contamination with jet fuel products in the soils and groundwater in the vicinity of the Caribbean Airport Facilities, Inc. (CAF) at the Luis Muñoz Marin International Airport (LMMIA), progressive reports are to be presented on a bimonthly basis to the U.S. EPA.

This report summarizes activities performed after the installation of monitoring wells at the Luis Muñoz Marin International Airport (LMMIA) mainly in areas operated by Caribbean Airport Facilities, Inc. (CAF). This third bimonthly report herein summarizes events documented until the week ending Friday, October 30th, 2015.

SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

A **Subsurface Investigation** effort was performed to identify any evident, current and/or potential, environmental contamination at the Luis Muñoz Marin International Airport (LMMIA) property lot, operated by Caribbean Airport Facilities, Inc. (CAF). This study was performed as per the request of **Ms. Jean Tirri**, representing CAF.



Environmental Professional's Signature



Date

Name: Fernando L. Rodríguez, P. E., SC

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Third Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marín International Airport (LMMIA)

1.0 INTRODUCTION

The period encompassed within the past two (2) months includes:

The first week of September (week ending Friday, September 4, 2015) through the last week of October (week ending Friday, October 30, 2015).

Within this period, the **Second Groundwater Bimonthly Sampling** event was scheduled and performed. Daily Activities for both sampling days are herein included (September 15-16, 2015). No weather nor airport operational delays arose during those two (2) days of sampling. All sampling and QA/QC procedures were strictly followed by all teams involved.

Regardless of the proper packing efforts, the laboratory was unable to analyze groundwater collected from the deep well at location 5 (MW5D) for TPH-DRO; the bottles arrived shattered.

Tabulated Results of this sampling are included as an attachment to this section. In addition, a comparison table is included showing results from the initial sampling (May 2015) for easy comparison with this (September 2015) and future results.

Significant reduction in TPH-GRO or volatile range levels are seen throughout all the shallow wells and most deep wells. This parameter represents lighter petroleum hydrocarbons than TPH-DRO, also referred to as the semivolatile range. However, the TPH-DRO results appear to have either remained at a certain level or slightly increased.

The corresponding Third Party Data Validation Report for these results is included at the end of this report (after the References).

In addition to the Bimonthly Sampling event described, Monthly Groundwater Levels Measurement events occurred twice during this period. Corresponding details of these events are described in Daily Activities Reports included in Section 2.0 as well as an updated copy of the Groundwater Levels Measurement Database in Section 3.0.

Caribbean Airport Facilities, Inc. - Subsurface Investigation Project

Tabulated Data received from: Advanced Environmental Laboratories, Inc.

Bimonthly Groundwater Sampling Results

			Analytical Parameters						
			Sampling Date	Total Petroleum Hydrocarbons-Gasoline Range Organics (TPH-GRO) C10-C28 microwave			Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO) C6-C10		
			Units	µg/L			µg/L		
	Lab Group Number	Lab Sample #	Date Collected	Result	Method Detection Limit (MDL)	Limit of Quantitation (LOQ)	Dry Result	Method Detection Limit (MDL)	Limit of Quantitation (LOQ)
MW11D-W01	1593287	8049491	9/15/2015	ND	20	50	31	30	94
MW11S-W01	1593287	8049492	9/15/2015	ND	20	50	620	30	94
MW9D-W01	1593287	8049493	9/15/2015	ND	20	50	200	30	94
Field Blank	1593287	8049494	9/15/2015	ND	20	50	ND	30	94
MW3S-W01	1593287	8049495	9/15/2015	ND	20	50	48	30	95
MW5D-W01	1593287	8049496	9/15/2015	24	20	50	-	-	-
MW5S-W01	1593287	8049497	9/15/2015	ND	20	50	67	30	95
MW5S-W01D	1593287	8049498	9/15/2015	ND	20	50	41	30	94
Equipment Blank	1593287	8049499	9/15/2015	ND	20	50	240	30	94
MW8D-W01	1593287	8049500	9/15/2015	ND	20	50	100	30	94
MW8D-MS	1593287	8049501	9/15/2015	1200	20	50	1200	30	94
MW8D-MSD	1593287	8049502	9/15/2015	1200	20	50	1200	30	95
MW8S-W01	1593287	8049503	9/15/2015	ND	20	50	ND	30	95
Trip Blank	1593287	8049504	8/26/2015	ND	20	50	-	-	-
MW9S-W01	1593287	8049505	9/15/2015	ND	100	250	400	30	95
MW10D-W01	1593287	8049506	9/15/2015	ND	20	50	47	30	95
MW10S-W01	1593287	8049507	9/15/2015	ND	20	50	ND	30	94
MW3D-W01	1593287	8049508	9/15/2015	ND	20	50	62	30	95
MW3D-W01D	1593287	8049509	9/15/2015	ND	20	50	58	30	95

Caribbean Airport Facilities, Inc. - Subsurface Investigation Project












Tabulated Data received from: Advanced Environmental Laboratories, Inc.












Bimonthly Groundwater Sampling Results

			Analytical Parameters						
			Sampling Date	Total Petroleum Hydrocarbons- Gasoline Range Organics (TPH-GRO) C10-C28 microwave			Total Petroleum Hydrocarbons- Diesel Range Organics (TPH-DRO) C6-C10		
			Units	µg/L			µg/L		
	Lab Group Number	Lab Sample #	Date Collected	Result	Method Detection Limit (MDL)	Limit of Quantitation (LOQ)	Result	Method Detection Limit (MDL)	Limit of Quantitation (LOQ)
Equipment Blank 1	1593616	8051111	9/16/2015	ND	20	50	41	30	94
MW4D-W01	1593616	8051112	9/16/2015	ND	20	50	36	30	94
MW4S-W01	1593616	8051113	9/16/2015	ND	100	250	3600	30	94
MW2D-W01	1593616	8051114	9/16/2015	25	20	50	75	30	95
Trip Blank	1593616	8051115	8/26/205	ND	20	50	-	-	-
MW2S-W01	1593616	8051116	9/16/2015	ND	100	250	410	31	95
Equipment Blank 2	1593616	8051117	9/16/2015	ND	20	50	ND	30	95
MW7S-W01	1593616	8051118	9/16/2015	ND	20	50	410	30	95
MW7D-W01	1593616	8051119	9/16/2015	ND	20	50	570	30	94
MW6S-W01	1593616	8051120	9/16/2015	ND	20	50	270	30	95
Field Blank	1593616	8051121	9/16/2015	ND	20	50	ND	30	94
MW1D-W01	1593616	8051122	9/16/2015	26	20	50	41	30	94
MW1S-W01	1593616	8051123	9/16/2015	ND	20	50	140	30	94
MW6D-W01	1593616	8051124	9/16/2015	23	20	50	95	30	94
MW6D-MS	1593616	8051125	9/16/2015	1100	20	50	1100	30	94
MW6D-MSD	1593616	8051126	9/16/2015	1100	20	50	1200	30	95

**Caribbean Airport Facilities, Inc.
Subsurface Investigation Project**












Data Comparison Tables. Tabulated Data received from: Advanced Environmental Laboratories, Inc.












TPH-GRO							
Shallow Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-S		2100	ND				
MW2-S		770	ND				
MW3-S		610	ND				
MW4-S		5300	ND				
MW5-S		76	ND				
MW6-S		990	ND				
MW7-S		210	ND				
MW8-S		270	ND				
MW9-S		940	ND				
MW10-S		210	ND				
MW11-S		ND	ND				
Max Result TPH-GRO		5300	0				

TPH-GRO							
Deep Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-D		240	26				
MW2-D		360	25				
MW3-D		410	ND				
MW4-D		860	ND				
MW5-D		140	24				
MW6-D		390	23				
MW7-D		ND	ND				
MW8-D		540	ND				
MW9-D		760	ND				
MW10-D		89	ND				
MW11-D		270	ND				
Max Result TPH-GRO		860	26				

**Caribbean Airport Facilities, Inc.
Subsurface Investigation Project**

Data Comparison Tables. Tabulated Data received from: Advanced Environmental Laboratories, Inc.

TPH-DRO							
Shallow Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-S		50	140				
MW2-S		43	410				
MW3-S		ND	48				
MW4-S		35	3600				
MW5-S		28	67				
MW6-S		140	270				
MW7-S		58	410				
MW8-S		ND	ND				
MW9-S		24	400				
MW10-S		ND	ND				
MW11-S		ND	620				
Max Result TPH-DRO		140	3600				

TPH-DRO							
Deep Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-D		20	41				
MW2-D		33	75				
MW3-D		ND	62				
MW4-D		30	36				
MW5-D		ND	-				
MW6-D		75	95				
MW7-D		ND	570				
MW8-D		40	100				
MW9-D		160	200				
MW10-D		ND	47				
MW11-D		ND	31				
Max Result TPH-DRO		160	570				



Third Bimonthly Report

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2.0 DAILY ACTIVITIES REPORTS

The following reports include relevant daily notes documented by the “CHES Services Corp. Team”. Historical weather data has been included for up to two (2) days prior to the groundwater level readings event, as provided by Weather Underground [1].

Weather Station ID: ISANJUAN16

In addition, observed water levels reported by NOAA’s Center for Operational Oceanographic Products and Services (CO-OPS) [2].

NOAA/NOS/CO-OPS Station - San Juan, PR - Station ID: 9755371

Established:	Mar 04, 1962
Time Meridian:	60° W
Present Installation:	Mar 25, 1989
Date Removed:	N/A
Water Level Max (ref MHHW):	2.77 Sep 18, 1989
Water Level Min (ref MLLW):	-1.09 Dec 20, 1968
Mean Range:	1.1 ft.
Diurnal Range:	1.58 ft.



Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Bimonthly Sampling Event		
Address:	LMMIA	Date:	September 15, 2015
Phone:	787-751-7810	CHES Representative:	HRM/NDM/DP
Time	Location	Activity / Observations	
6:45	CAF 1	Arrival to prepping materials.	
7:30	CAF 1	Prepping field blanks.	
8:33	MW8	MW8 gate working on Equipment Blank	
8:47	MW8	Arrived at sampling location 8 to prepare for sampling	
8:55	MW8	Trying out borrowed portable generator from FLRA.	
9:03	MW8	J&S personnel gassing up CAF pickup truck & portable generator.	
9:21	MW8	Return J&S personnel.	
9:28	MW8D	Low yield; but @ 4"7"; a lot of sediment perceived at bottom of well. Had water over the plug.	
9:31	MW8	J&S personnel brought gasoline can.	
9:35	MW8D	Sampling.	
9:46	MW8S	Purged started.	
9:51	MW8S	Sampling.	
9:55	MW8	Finished sampling	
10:45	MW11	Arrived to sample and Preparing.	
11:17	MW11D	Finished sampling. Able to purge 5 gallons due to low yield.	
11:24	MW11S	Purge started. Purged 2 gallons	
11:40	MW11S	Done sampling	
11:55	MW9D	Arrived to sample and Preparing.	
12:05	MW9S	Asked to UPS personnel to move the equipment in order to perform sampling.	
12:15	MW9D	Finished sampling. Purged 5 gallons.	
12:30	CAF 1	Lunch	
13:20	MW9S	Still waiting on UPS to move equipment out of the way.	
13:30	MW9	Prepping to the samples.	
13:36	MW9S	Purge started	
13:50	MW9	Finished sampling	
13:51	MW10	Prepping to the samples.	
13:56	MW10S	Found water prior to uncapping well.	
14:09	MW10D	Finished sampling	
14:20	MW10S	Finished sampling	
14:30	MW3	Arrived and start prepping to samples.	
15:03	MW3	Finished sampling	
15:04	MW5	Arrived at sampling location	
15:23	MW5	Moving to 5S	
16:30	MW5	Done at 5, waiting on rain to stop in order to decide whether or not to sample MW7	
16:45	CAF 1	Won't sample 7 today, prepping samples for shipping.	
18:30	CAF 1	Done shipping samples.	



Daily Activities Report

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Project:	CAF MW Bimonthly Sampling Event																																																																																										
Address:	LMMIA	Date:	September 15, 2015																																																																																								
Moving Forward (Next Steps)																																																																																											
Action Item	Deadline	%Completion	Responsible Party																																																																																								
N/A	N/A	N/A	N/A																																																																																								
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Two (2) days prior to sampling event			Special Comments																																																																																								
<div><p>Sunday, September 13, 2015</p><p>« Previous Day Next Day »</p><p>Daily Weekly Monthly Custom</p><table><thead><tr><th></th><th>Actual</th><th>Average</th><th>Record</th></tr></thead><tbody><tr><td colspan="4">Temperature</td></tr><tr><td>Mean Temperature</td><td>29 °C</td><td>29 °C</td><td></td></tr><tr><td>Max Temperature</td><td>32 °C</td><td>32 °C</td><td>34 °C [1906]</td></tr><tr><td>Min Temperature</td><td>27 °C</td><td>26 °C</td><td>21 °C [1928]</td></tr><tr><td colspan="4">Degree Days</td></tr><tr><td>Heating Degree Days</td><td>0</td><td>0</td><td></td></tr><tr><td>Month to date heating degree days</td><td>0</td><td>0</td><td></td></tr><tr><td>Since 1 July heating degree days</td><td>0</td><td>0</td><td></td></tr><tr><td>Cooling Degree Days</td><td>20</td><td>19</td><td></td></tr><tr><td>Month to date cooling degree days</td><td>253</td><td>247</td><td></td></tr><tr><td>Year to date cooling degree days</td><td>4328</td><td>4111</td><td></td></tr><tr><td>Growing Degree Days</td><td>35 [Base 50]</td><td></td><td></td></tr><tr><td colspan="4">Moisture</td></tr><tr><td>Dew Point</td><td>24 °C</td><td></td><td></td></tr><tr><td>Average Humidity</td><td>74</td><td></td><td></td></tr><tr><td>Maximum Humidity</td><td>85</td><td></td><td></td></tr><tr><td>Minimum Humidity</td><td>63</td><td></td><td></td></tr><tr><td colspan="4">Precipitation</td></tr><tr><td>Precipitation</td><td>6.35 mm</td><td>5.08 mm</td><td>18.77 mm [1928]</td></tr><tr><td>Month to date precipitation</td><td>2.72</td><td>2.70</td><td></td></tr><tr><td>Year to date precipitation</td><td>25.79</td><td>36.32</td><td></td></tr></tbody></table></div>					Actual	Average	Record	Temperature				Mean Temperature	29 °C	29 °C		Max Temperature	32 °C	32 °C	34 °C [1906]	Min Temperature	27 °C	26 °C	21 °C [1928]	Degree Days				Heating Degree Days	0	0		Month to date heating degree days	0	0		Since 1 July heating degree days	0	0		Cooling Degree Days	20	19		Month to date cooling degree days	253	247		Year to date cooling degree days	4328	4111		Growing Degree Days	35 [Base 50]			Moisture				Dew Point	24 °C			Average Humidity	74			Maximum Humidity	85			Minimum Humidity	63			Precipitation				Precipitation	6.35 mm	5.08 mm	18.77 mm [1928]	Month to date precipitation	2.72	2.70		Year to date precipitation	25.79	36.32	
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Daily Activities Report

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Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Bimonthly Sampling Event		
Address:	LMMIA	Date:	September 15, 2015

Weather History

Day of sampling event

Special Comments

Tuesday, September 15, 2015

« Previous Day

Next Day »

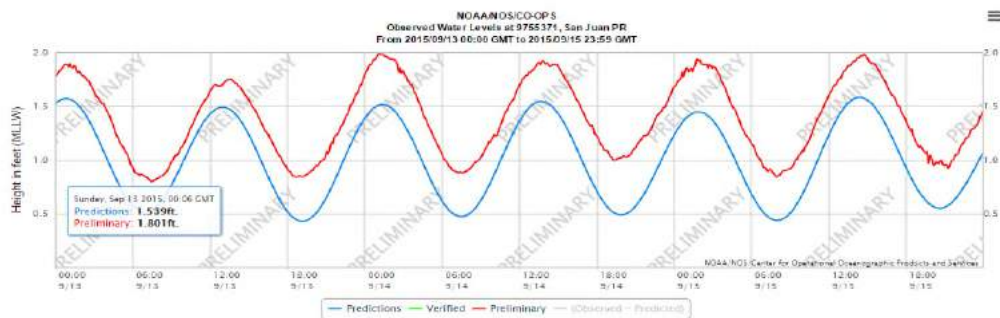
Daily Weekly Monthly Custom

	Actual	Average	Record
Temperature			
Mean Temperature	29 °C	29 °C	
Max Temperature	32 °C	32 °C	33 °C (2012)
Min Temperature	26 °C	26 °C	21 °C (1960)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	19	19	
Month to date cooling degree days	291	285	
Year to date cooling degree days	4366	4149	
Growing Degree Days	34 [Base 50]		
Moisture			
Dew Point	24 °C		
Average Humidity	78		
Maximum Humidity	87		
Minimum Humidity	68		
Precipitation			
Precipitation	0.76 mm	4.57 mm	97.03 mm (2004)
Month to date precipitation	2.75	3.07	
Year to date precipitation	25.62	36.69	

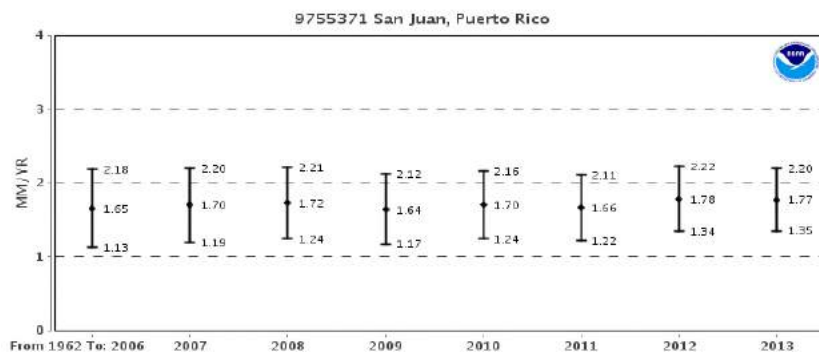
Ref: Weather Underground

Water Levels

Two (2) days prior to sampling event until day of sampling event



Previous Mean Water Level Trends





Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Bimonthly Sampling Event		
Address:	LMMIA	Date:	September 15, 2015
Phone:	787-751-7810	CHES Representative:	HRM/VCP/DP
Time	Location	Activity / Observations	
7:00	MW4	Arrival, prepping for blanks	
7:21	MW4	Problems with generator, purged 1 gallon.	
7:32	MW4	Continued purging	
7:56	MW4	Done sampling	
8:10	MW2	Arrived	
8:28	MW2	Working on problems with generator	
8:45	MW2	Working on problem with pump.	
9:00	MW2	J&S personnel taking for equipment to try to fix pump.	
9:40	MW2	Joel back onsite trying to fix pump's ground.	
10:20	MW2	Pump fixed	
10:45	MW2	Done sampling	
10:54	MW1	Arrived	
11:12	MW1	Light rain	
11:30	CAF1	Lunch	
12:10	CAF1	Prepping equipment for sampling inside	
12:32	CAF1	Passed checkout	
12:35	MW6S	Setting up at 6	
13:00	MW6D	Working on samples	
13:08	MW6S	Problems with pump	
13:25	MW6	J&S to bring replacement; bailers & possibly another submersible pump.	
13:55	MW7	Arrived at sampling location #7 with bailers. Working on bailer Equipment Blank.	
14:03	MW7S	Purging began with bailers.	
16:22	MW7S	Done sampling & still purging MW7D	
16:33	MW7D	Sampling	
16:45	MW6	Arrived	
17:10	CAF1	Back @ CAF1 to prep for shipping	
18:05	CAF1	Still working on packing	
19:00	CAF1	Done shipping	
Moving Forward (Next Steps)			
Action Item	Deadline	%Completion	Responsible Party
N/A	N/A	N/A	N/A



Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Bimonthly Sampling Event																																																																																										
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Daily Activities Report

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Ref: National Oceanic and Atmospheric Administration																																																																																											



Daily Activities

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associate.
Chemical/Environmental Engineering & Industrial Hygiene Consultant:
www.flrches.com

Project:	CAF Groundwater Monitoring Wells		
Address:	LMMIA	Date:	September-15

Weather History

Climatological Data for SAN JUAN L M MARIN AP, PR - September 2015

Click column heading to sort ascending, click again to sort descending.

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2015-09-01	90	77	83.5	-0.2	0	19	1.65	0.0	0
2015-09-02	91	78	84.5	0.8	0	20	0.19	0.0	0
2015-09-03	90	79	84.5	0.8	0	20	0.00	0.0	0
2015-09-04	89	79	84.0	0.3	0	19	0.00	0.0	0
2015-09-05	89	79	84.0	0.3	0	19	0.13	0.0	0
2015-09-06	92	79	85.5	1.8	0	21	0.00	0.0	0
2015-09-07	91	79	85.0	1.4	0	20	0.12	0.0	0
2015-09-08	89	79	84.0	0.4	0	19	0.03	0.0	0
2015-09-09	90	80	85.0	1.4	0	20	T	0.0	0
2015-09-10	90	79	84.5	0.9	0	20	0.20	0.0	0
2015-09-11	90	80	85.0	1.4	0	20	0.15	0.0	0
2015-09-12	86	76	81.0	-2.6	0	16	T	0.0	0
2015-09-13	90	80	85.0	1.5	0	20	0.25	0.0	0
2015-09-14	89	79	84.0	0.5	0	19	0.00	0.0	0
2015-09-15	89	78	83.5	0.0	0	19	0.03	0.0	0
2015-09-16	90	78	84.0	0.5	0	19	0.05	0.0	0
2015-09-17	88	80	84.0	0.5	0	19	0.00	0.0	0
2015-09-18	88	79	83.5	0.0	0	19	0.00	0.0	0
2015-09-19	89	79	84.0	0.6	0	19	T	0.0	0
2015-09-20	89	79	84.0	0.6	0	19	0.42	0.0	0
2015-09-21	88	78	83.0	-0.4	0	18	0.00	0.0	0
2015-09-22	88	78	83.0	-0.4	0	18	1.06	0.0	0
2015-09-23	88	77	82.5	-0.9	0	18	0.02	0.0	0
2015-09-24	90	78	84.0	0.6	0	19	0.00	0.0	0
2015-09-25	95	78	86.5	3.2	0	22	0.00	0.0	0
2015-09-26	92	80	86.0	2.7	0	21	0.00	0.0	0
2015-09-27	94	79	86.5	3.2	0	22	0.00	0.0	0
2015-09-28	91	78	84.5	1.2	0	20	0.00	0.0	0
2015-09-29	92	80	86.0	2.7	0	21	0.00	0.0	0
2015-09-30	92	79	85.5	2.3	0	21	0.00	0.0	0
Sum	2699	2361	-	-	0	586	4.30	0.0	-
Average	90.0	78.7	84.3	0.8	-	-	-	-	0.0
Normal	89.2	77.8	83.5	-	0	555	5.77	0.0	-

Ref: NOAA NWSF; NOWData - NOAA Online Weather Data; San Juan LMMIA Station



Daily Activities Report

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Chemical/Environmental Engineering & Industrial Hygiene Consultants
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Project:	CAF MW Weekly Groundwater levels reading																																																																																										
Address:	LMMIA	Date:	October 15, 2015																																																																																								
Phone:	787-751-7810	CHES Representative:	NDM																																																																																								
Time	Location	Activity / Observations																																																																																									
8:00	CAF1	CHES representative arrived.																																																																																									
8:30	CAF1	CHES and J&S Personnel arrived																																																																																									
8:54	MW5	Arrived for GW level readings. Done at 9:03																																																																																									
9:04	MW7	Arrived for GW level readings. Both wells are full of water passed the water-tight plug. Evacuated water prior to opening well cap.																																																																																									
9:14	MW7	Done																																																																																									
9:15	MW9	Arrived for GW level readings. Done at 9:22																																																																																									
9:23	MW10	Arrived for GW level readings. Done at 9:28																																																																																									
9:32	MW11	Arrived for GW level readings. Done at 9:37																																																																																									
9:40	MW6	Arrived for GW level readings. Both wells are full of water passed the water-tight plug. Evacuated water prior to opening well cap. Done at 9:46																																																																																									
9:47	MW3	Arrived for GW level readings. Done at 9:54																																																																																									
9:57	MW1	Arrived for GW level readings. Done at 10:01																																																																																									
10:04	MW4	Arrived for GW level readings. Done at 10:12																																																																																									
10:13	MW2	Arrived for GW level readings. Done at 10:17																																																																																									
10:19	MW8	Arrived for GW level readings. Done at 10:23																																																																																									
10:35	CAF1	CHES and J&S Personnel Checked out																																																																																									
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Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	Date:	October 15, 2015

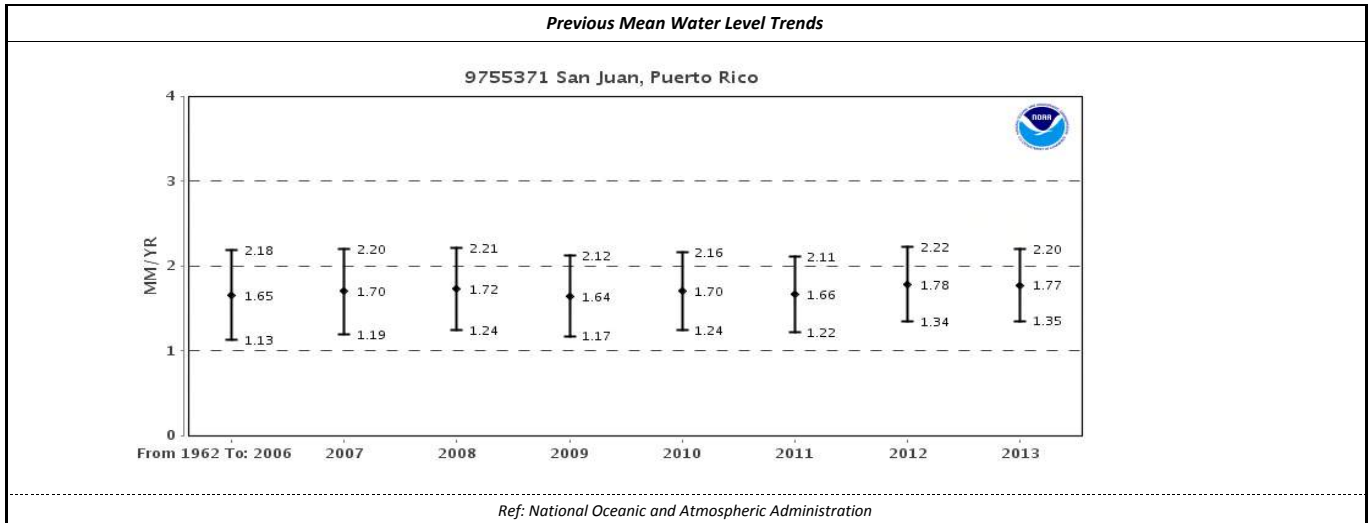
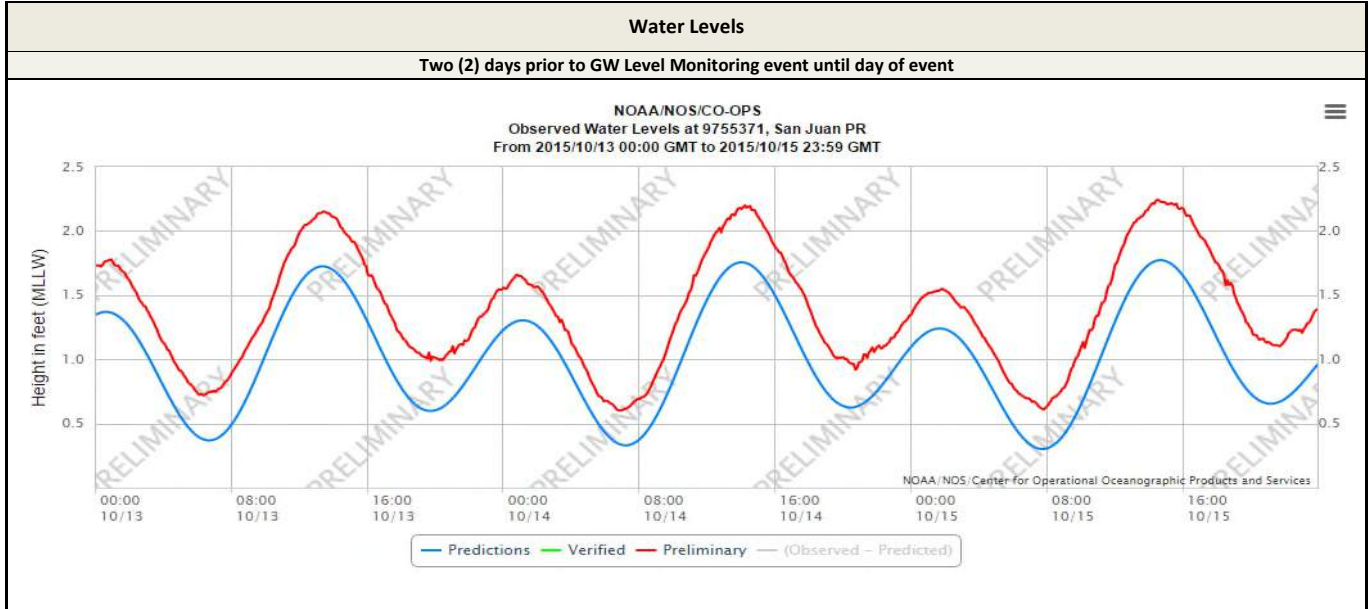
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Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	Date:	October 15, 2015





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Project:	CAF Groundwater Monitoring Wells		
Address:	LMMIA	Date:	October-15

Weather History

Climatological Data for SAN JUAN L M MARIN AP, PR - October 2015

Click column heading to sort ascending, click again to sort descending.

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2015-10-01	95	79	87.0	3.8	0	22	0.00	0.0	0
2015-10-02	93	82	87.5	4.3	0	23	T	0.0	0
2015-10-03	93	79	86.0	2.8	0	21	T	0.0	0
2015-10-04	95	83	89.0	5.8	0	24	0.00	0.0	0
2015-10-05	95	82	88.5	5.4	0	24	T	0.0	0
2015-10-06	94	80	87.0	3.9	0	22	T	0.0	0
2015-10-07	92	81	86.5	3.4	0	22	0.03	0.0	0
2015-10-08	91	81	86.0	3.0	0	21	T	0.0	0
2015-10-09	92	77	84.5	1.5	0	20	0.04	0.0	0
2015-10-10	93	79	86.0	3.0	0	21	T	0.0	0
2015-10-11	92	80	86.0	3.1	0	21	0.00	0.0	0
2015-10-12	92	80	86.0	3.1	0	21	0.09	0.0	0
2015-10-13	91	79	85.0	2.1	0	20	0.28	0.0	0
2015-10-14	91	80	85.5	2.7	0	21	0.02	0.0	0
2015-10-15	89	78	83.5	0.7	0	19	T	0.0	0
2015-10-16	90	78	84.0	1.3	0	19	0.02	0.0	0
2015-10-17	90	78	84.0	1.3	0	19	0.35	0.0	0
2015-10-18	89	78	83.5	0.9	0	19	0.01	0.0	0
2015-10-19	89	78	83.5	0.9	0	19	0.00	0.0	0
2015-10-20	92	78	85.0	2.5	0	20	0.00	0.0	0
2015-10-21	90	79	84.5	2.0	0	20	T	0.0	0
2015-10-22	93	79	86.0	3.6	0	21	0.00	0.0	0
2015-10-23	89	79	84.0	1.7	0	19	0.01	0.0	0
2015-10-24	89	74	81.5	-0.8	0	17	0.04	0.0	0
2015-10-25	87	74	80.5	-1.7	0	16	0.24	0.0	0
2015-10-26	83	75	79.0	-3.2	0	14	T	0.0	0
2015-10-27	86	77	81.5	-0.6	0	17	0.05	0.0	0
2015-10-28	88	76	82.0	0.0	0	17	0.49	0.0	0
2015-10-29	89	76	82.5	0.6	0	18	0.01	0.0	0
2015-10-30	89	77	83.0	1.1	0	18	T	0.0	0
2015-10-31	89	77	83.0	1.2	0	18	0.09	0.0	0
Sum	2810	2433	-	-	0	613	1.77	0.0	-
Average	90.6	78.5	84.6	2.0	-	-	-	-	0.0
Normal	88.4	76.9	82.6	-	0	547	5.59	0.0	-

Ref: NOAA NWSF; NOWData - NOAA Online Weather Data; San Juan LMMIA Station



Third Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marín International
Airport (LMMIA)

3.0 GROUNDWATER LEVELS DATABASE

The following groundwater levels database includes data corresponding to the twenty-two (22) wells installed at the LMMIA.



Fernando L. Rodríguez, P.E. & Associates

Chemical/Environmental Engineering & Industrial Hygiene Consultants

PO BOX 193430 San Juan, PR 00919-3430

Tel.: 787-751-7810 | Fax: 787-751-8988 | flrodriguez@flraches.com | www.flraches.com



Groundwater Monitoring Wells Construction and Sampling Project

Weekly GW Level Readings

GW Level Monitoring Start:

May 18, 2015

GW Level Readings To-Date: October 15, 2015

Well ID		MW1S	MW1D	MW2S	MW2D	MW3S	MW3D	MW4S	MW4D	MW5S	MW5D	MW6S	MW6D	MW7S	MW7D	MW8S	MW8D	MW9S	MW9D	MW10S	MW10D	MW11S	MW11D
Well depth			20.5'	10'	20'		20'		20' 5"		20'		20.5'		20.5'	10'	20.5'		20.5'		20.5'		23.5'
Week of	Date																						
May 18, 2015	May 18, 2015	6' 3"	6' 4"	4' 7"	4' 4"	-	-	3' 5"	2' 8"	6' 9"	8' 6"	-	-	-	-	-	-	-	-	-	-	-	-
May 18, 2015	May 19, 2015	-	-	-	-	-	-	-	-	-	-	6' 3"	6' 4"	6'	6' 6"	-	-	6'	13'	6' 9"	6' 9"	6' 3"	9'
May 18, 2015	May 20, 2015	-	-	-	-	6'4"	6'5"	-	-	-	-	-	-	-	-	2'8"	3'	7'	7'7"	-	-	7'4"	7'4"
May 25, 2015	May 28, 2015	6'	6'	4'1"	4'	6'5"	6'6"	2'11"	2'11"	NR	6'10"	5'10"	6'6"	5'11"	6'11"	3'	3'1"	6'11"	7'2"	6'6"	6'8"	7'2"	7'
June 1, 2015	June 4, 2015	6' 3"	6' 5"	4'	3' 6"	6' 3"	6' 2"	3'	3'	6'	6' 8"	5' 6"	6'	5' 8"	6' 1"	2' 8"	2' 2"	5' 6"	7'	6' 3"	6' 3"	6' 7"	7'
June 8, 2015	June 11, 2015	5' 9"	5' 11"	4' 1"	3' 10"	7'	7'	3'	3' 3"	6' 11"	7' 1"	6' 3"	6' 6"	6' 1"	4' 3"	2' 11"	3' 6"	6' 6"	7' 1"	7'	6' 10"	7' 3"	7' 6"
June 15, 2015	June 18, 2015	-	-	4'	3' 6"	-	-	3' 2"	2' 11"	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June 15, 2015	June 19, 2015	5' 10"	5' 7"	-	-	6' 4"	6' 3"	-	-	6' 11"	6' 5"	5' 6"	6'	5' 7"	4' 1"	2' 11"	3'	5' 11"	6' 6"	6' 4"	6' 4"	7'	7'
June 22, 2015	June 25, 2015	6'	6' 4"	4' 4"	4' 1"	6' 9"	6' 10"	3' 4"	3' 3"	6' 9"	6' 11"	6' 2"	6' 4"	6' 1"	5'	3'	3' 4"	5' 10"	6' 7"	6' 10"	6' 9"	7' 6"	7' 5"
June 29, 2015	July 2, 2015	5' 11"	6' 3"	4' 4"	4' 1"	6' 7"	6' 9"	3' 3"	3' 2"	6' 9"	6' 11"	6' 2"	6' 5"	6' 1"	6' 4"	3'	3' 4"	5' 10"	6' 6"	6' 8"	6' 8"	7' 2"	7' 3"
July 6, 2015	July 9, 2015	5' 10"	6' 3"	4' 3"	4'	6' 8"	6' 9"	3' 4"	3' 2"	6' 8"	6' 10"	6' 2"	6' 4"	6' 1"	6' 3"	3'	3' 4"	5' 10"	6' 4"	6' 8"	6' 8"	7' 7"	7' 4"
July 13, 2015	July 16, 2015	6'	6' 2"	4' 2"	3' 11"	6' 6"	6' 8"	3' 3"	3' 2"	6' 8"	6' 10"	6' 2"	6' 4"	6' 1"	6' 4"	2' 11"	3' 3"	6' 3"	6' 5"	6' 7"	6' 7"	7'	7' 3"
July 20, 2015	July 21, 2015	-	-	-	-	6' 7"	6' 9"	-	-	6' 7"	6' 10"	6' 1"	6' 4"	6'	6' 4"	-	-	6' 2"	6' 7"	6' 7"	6' 7"	7' 3"	7' 4"
July 20, 2015	July 22, 2015	6'	6' 4"	4' 2"	4'	-	-	3' 4"	3' 2"	-	-	-	-	-	-	3'	3' 3"	-	-	-	-	-	-
July 27, 2015	July 30, 2015	6'	6' 2"	4' 4"	4'	6' 7"	6' 8"	3' 4"	3' 1"	6' 8"	6' 8"	6' 2"	6' 3"	6'	7' 7"	3' 1"	3' 5"	6' 1"	6' 3"	6' 7"	6' 7"	7' 8"	7' 6"
August 3, 2015	August 6, 2015	6' 1"	6' 2"	4' 2"	4'	6' 8"	6' 9"	3' 4"	3' 2"	6' 7"	6' 10"	6' 5"	6' 4"	6' 2"	7' 3"	3' 1"	3' 4"	6' 10"	6' 2"	6' 8"	6' 10"	7' 9"	7' 7"
August 10, 2015	August 12, 2015	6'1"	6'1"	4' 2"	3'9"	6'6"	6'7"	3'	3'	6'7"	6'9"	6'7"	6'1"	6'	6'2"	3'	3'2"	5'9"	6'2"	6'6"	6'6"	7'6"	7'6"
August 17, 2015	August 20, 2015	6'	5' 10"	3' 10"	4' 1"	6' 8"	6' 7"	3'	3' 1"	6' 7"	6' 8"	6' 1"	6' 1"	5' 11"	6' 2"	2' 10"	3'	5' 6"	6'	6' 3"	6' 4"	6' 8"	6' 11"
August 24, 2015	August 27, 2015	6'	6'	4'1"	3'9"	6'5"	6'6"	3'	2'11"	6'5"	6'8"	6'	6'1"	5'10"	6'	2'7"	3'	5'5"	5'9"	6'2"	6'3"	6'5"	6'8"
September 14, 2015	September 15, 2015	-	-	-	-	6'2"	6'5"	-	-	6'5"	6'7"	-	-	-	-	2'9"	2'11"	5'6"	5'7"	6'3"	6'1"	6'7"	6'8"
September 14, 2015	September 16, 2015	6'	6'	4'0"	3'9"	-	-	3'1"	3'	-	-	5'9"	6'	5'9"	6'	-	-	-	-	-	-	-	-
September 14, 2015	October 15, 2015	5'10"	511"	4'1"	3'10"	6'6"	6'5"	3'1"	3'	6'6"	6'7"	5'11"	6'1"	5'10"	6'2"	2'10"	3'1"	5'9"	5'10"	6'5"	6'4"	7'2"	7'1"

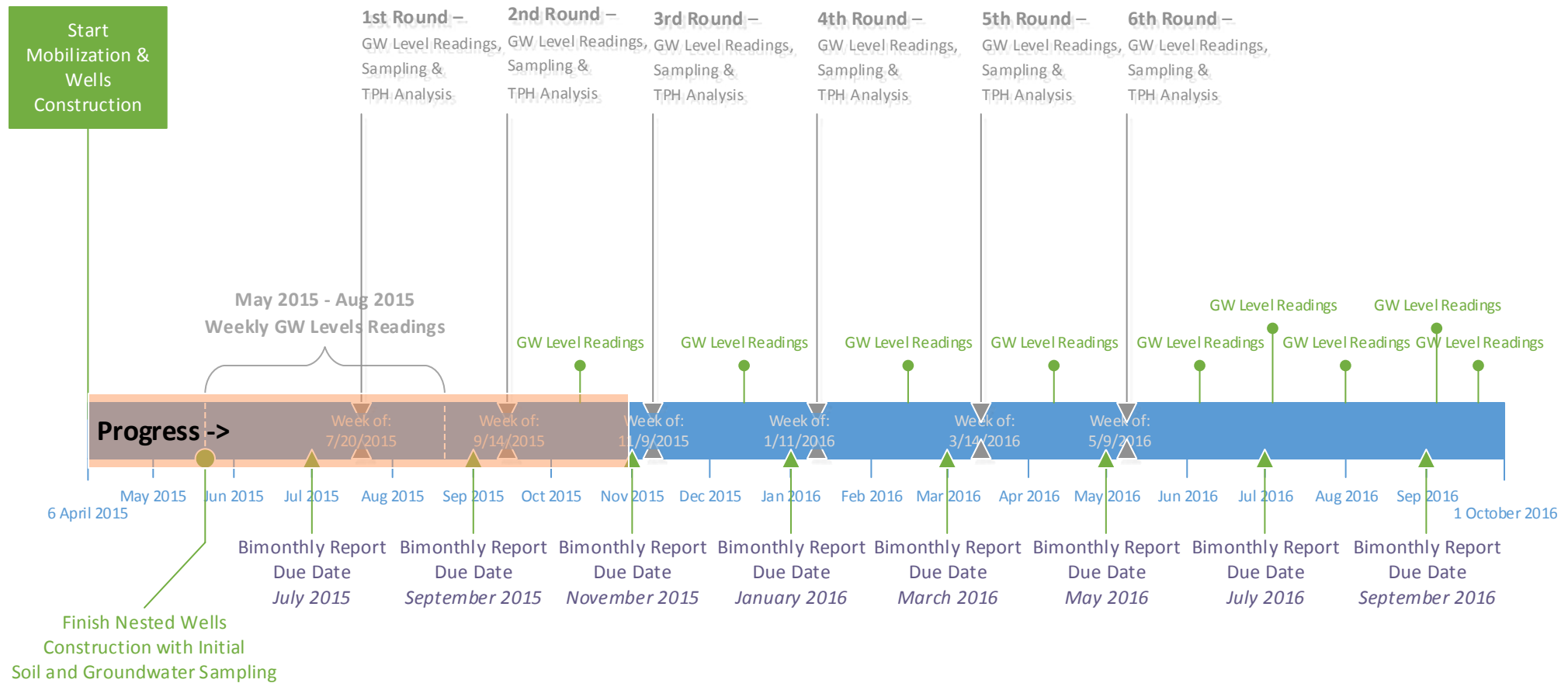


Third Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marín International
Airport (LMMIA)

4.0 PROJECT PROGRESS AND/OR PROPOSED SCHEDULE

The following pages provide project progress details and an updated proposed schedule for the tasks agreed upon with U.S. EPA.



Rev.: June 3, 2015

TITLE

Caribbean Airport Facilities, Inc.

LMMIA, Carolina, PR

Eleven (11) Nested Groundwater Monitoring Wells

Construction with Bimonthly

Sampling/Analysis Timeline

Notes:

1. During the months of April and May 2015, groundwater (GW) and soil samples were collected at each one of the nested wells as they were constructed.
2. The following 3-month period, on a weekly basis, GW levels (shallow and deep) are being logged, and monthly thereafter.
3. After the initial sampling, the nested wells are to be sampled and samples to be analyzed for TPH analysis by the designated laboratory on a bimonthly basis (every 2 months) for the first year.

M. LaReau (EPA): After sampling and water level measurements have commenced, CAF can make a recommendation based on the data to alter this schedule. At that time, EPA will review all documents presented to determine if a change is warranted.



Third Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marín International
Airport (LMMIA)

5.0 REFERENCES

- 1 Weather Underground. Historical Weather. [Internet]. 2015 Available from:
<http://www.wunderground.com/history/>.
- 2 Center for Operational Oceanographic Products and Services. Observed Tides/Water Levels
at 9755371, San Juan, PR. [Internet]. Available from:
<http://tidesandcurrents.noaa.gov/waterlevels.html>.

DATA VALIDATION REPORT FOR THE SEPTEMBER, 2015 DATA COLLECTION EVENTS PERFORMED AT

CAF GW Monitoring Well Construction Project
(Continuing Sampling)

Prepared for

Eng. Fernando Rodríguez
Fernando L. Rodríguez, P.E. & Associates

September, 2015

Prepared by

Rafael Infante
Environmental Consultant
Chemist License 1888

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INTRODUCTION

The purpose of the independent data validation process for the Caribbean Airport Facility (CAF) GW well construction project is to assess the effect of the overall analytical process on the usability of the data. The validation process includes the verification and interpretation of analytical data, which provides the end user with a more complete understanding of the quality and defensibility of the laboratory data. The two major categories of data evaluation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance with the analytical methods and regulatory requirements; either the laboratory did, or did not, analyze the samples within the limits of the established analytical method. Evaluation of matrix interferences is more subtle and involves the analysis of several areas of results including surrogate spike recoveries, matrix spike recoveries, and reproducibility of duplicate sample results.

After the final analytical results were released by the laboratory, both the sample and QC data were carefully reviewed to verify sample identity, instrument calibration, detection limits, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. Additionally, the QC data were reviewed to ascertain whether they were within the laboratory-defined limits for accuracy and precision. Any non-conforming data were discussed in the laboratory's data package case narrative. Additional non-conforming (qualified or rejected data) form part of this report.

The sample results were assessed according to USEPA data validation guidance documents:

- USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3) is used as a primary guidance document. Also, QC criteria from “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996),” specifically for Methods 8000/8021B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.
- Data Validation Standard Operating Procedure for Organic Analysis of Low/Medium Concentration Semivolatile Acquired using SW-846 Method 8270C (SOW SOM01.2-SOP HW-35, August 2009 –Revision 1); Validation Semivolatile Organic Compounds by SW846 8270 (SOP HW-22, August, 2009 – Revision 4). Also, the QC criteria from “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996),” specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Sample copies of the Data Review Worksheets utilized for the validation process are included in Appendix A. Completed data validation checklist and raw data are kept on our files.

The following USEPA primary flags were used to qualify the data for this study:

- (No Code) = Confirmed Identification.
- B = Detected substantially above the level reported in laboratory or field blank.
- R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
- N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling events.
- J = Analyte present. Reported value may not be accurate or precise.
- K = Analyte present. Reported value may be biased high. Actual value is expected lower.
- L = Analyte present. Reported value may be biased low. Actual value is expected higher.
- UL = Not detected, quantitation limit is probably higher.
- Q = No analytical result.
- NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.
- U = The analyte was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- R = The data are unusable. Analyte may or may not be present in the sample.
- UJ = The analyte was analyzed for, but not detected. The associated detection limit is an estimate and may be inaccurate or imprecise.
- X = Surrogate recovery outside control limits.
- H = Sample extracted or analyzed outside the method specific holding time

II. VALIDATION REPORT

This report discusses the results of data validation of analytical data provided by Eurofins-Lancaster Laboratories Environmental for samples collected at the Caribbean Airport Facility (CAF) in Carolina, Puerto Rico on September 15 and 16, 2015 reported under SDG numbers: 1593287 and 1593616. Copies of the laboratory results are included in the Appendix B. The methods employed are shown in Table 1. Table 2 summarizes the samples collected, sampling date, and analysis performed.

Table 1. Analytical Methods

ANALYSIS PERFORMED	ANALYTICAL METHOD
AQUEOUS	
TPH- GASOLINE (C6 – C10)	SW846-5030B/SW846-8015B
TPH-DIESEL (C10 – C28)	SW846-3510C/SW846-8015B

Table 2. Samples Analyzed, Sampling Date, and Analysis Performed

SAMPLE NUMBER	SAMPLE DESCRIPTION	SAMPLING DATE	ANALYSIS
8049491	MW11D-W01	09-15-15	TPH-GRO; TPH DRO
8049492	MW11S-W01	09-15-15	TPH-GRO; TPH-DRO
8049493	MW-9D-W01	09-15-15	TPH-GRO; TPH-DRO
8049494	FIELD BLANK COMPOSITE WATER	09-15-15	TPH-GRO; TPH DRO
8049495	MW3S-W01	09-15-15	TPH-GRO; TPH-DRO
8049496	MW-5D-W01	09-15-15	TPH-GRO; TPH-DRO
8049497	MW5S-W01	09-15-15	TPH-GRO; TPH DRO
8049498	MWS-W01D	09-15-15	TPH-GRO; TPH-DRO
8049499	EQUIPMENT BLANK COMPOSITE WATER	09-15-15	TPH-GRO; TPH-DRO
8049500	MW8D-W01	09-15-15	TPH-GRO; TPH DRO
8049501	MW8D-MS	09-15-15	TPH-GRO; TPH-DRO
8049502	MW8D-MSD	09-15-15	TPH-GRO; TPH-DRO
8049503	MW8S-W01	09-15-15	TPH-GRO; TPH DRO
8049504	TRIP BLANK	08-26-15	TPH-GRO
8049505	MW9S-MSD	09-15-15	TPH-GRO; TPH-DRO
8049506	MW10D-W01	09-15-15	TPH-GRO; TPH DRO
8049507	MW10S-W01	09-15-15	TPH-GRO; TPH-DRO
8049508	MW3D-W01	09-15-15	TPH-GRO; TPH-DRO
8049509	MW3D-W01	09-15-15	TPH-GRO; TPH DRO

Table 2. Samples Analyzed, Sampling Date, and Analysis Performed


SAMPLE NUMBER	SAMPLE DESCRIPTION	SAMPLING DATE	ANALYSIS
8051111	EQUIPMENT BLANK 1 COMPOSITE WATER	09-16-15	TPH-GRO; TPH DRO
8051112	MW4D-W01	09-16-15	TPH-GRO; TPH-DRO
8051113	MW-4S-W01	09-16-15	TPH-GRO; TPH-DRO
8051114	MW2D-W01	09-16-15	TPH-GRO; TPH-DRO
8051115	TRIP BLANK	09-16-15	TPH-GRO
8051116	MW2S-W01	09-16-15	TPH-GRO; TPH-DRO
8051117	EQUIPMENT BLANK 2 COMPOSITE WATER	09-16-15	TPH-GRO; TPH-DRO
8051118	MW7S-W01	09-16-15	TPH-GRO; TPH-DRO
8051119	MW7D-W01	09-16-15	TPH-GRO; TPH-DRO
8051120	MW-6S-W01	09-16-15	TPH-GRO; TPH-DRO
8051121	FIELD BLANK COMPOSITE WATER	09-16-15	TPH-GRO; TPH-DRO
8051122	MW1D-W01	09-16-15	TPH-GRO; TPH-DRO
8051123	MW-1S-W01	09-16-15	TPH-GRO; TPH-DRO
8051124	MW6D-W01	09-16-15	TPH-GRO; TPH-DRO
8051125	MW6D-MS	09-16-15	TPH-GRO; TPH-DRO
8051126	MW6D-MSD	09-16-15	TPH-GRO; TPH-DRO

The samples results were evaluated using general guidelines for data validation approved by local (PR Environmental Quality Board (EQB)) and national (Environmental Protection Agency (EPA)). General qualifiers were employed. There are no analytical and quality issues observed in the data package.

Note: Laboratory results are assessed based on accuracy and precision. Accuracy is the difference between experimental value and true value. In environmental samples, true values are not known and thus accuracy is evaluated indirectly. Accuracy evaluation is performed by evaluating surrogate recoveries, analysis of matrix spike/matrix spike duplicates, and laboratory control samples. Accuracy was assessed using laboratory control samples (LCS); matrix spike and matrix spike duplicate recovery results. Precision was assessed by evaluating results of laboratory and field duplicates.

Certification

The samples described in Table 2 were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document. The overall quality of the data is acceptable. Some of the results were qualified (J) by the laboratory none of the results were rejected (R). The results are valid and can be used for decision taking purposes.



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APPENDIX A

Data Review Worksheets

Type of validation Full: _____

Project Number: _____

Date: _____

REVIEW OF SEMIVOLATILE ORGANIC (SVOCs) PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence *Data Validation Standard Operating Procedure for Organic Analysis of Low/Medium Concentration Semivolatile Acquired using SW-846 Method 8270C* (SOW SOM01.2- SOP HW-35, August 2009 – Revision 1); *Validation Semivolatile Organic Compounds by SW846 8270* (SOP HW-22, August, 2009 – Revision 4) (noted herein as the “primary guidance document”), Also, QC criteria from “*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)*,” specifically for *Methods 8000/8270C* are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _____ data package received has been reviewed and the quality control and performance data summarized. The data review for SVOCs included:

Lab. Project/SDG No.: _____

Sample matrix: _____

No. of Samples: _____

Field blank No.: _____

Trip blank No.: _____

Equipment blank No.: _____

Field duplicate No.: _____

_____ Data Completeness

_____ Holding Times

_____ GC/MS Tuning

_____ Internal Standard Performance

_____ Blanks

_____ Surrogate Recoveries

_____ Matrix Spike/Matrix Spike Duplicate

_____ Laboratory Control Spikes

_____ Field Duplicates

_____ Calibrations

_____ Compound Identifications

_____ Compound Quantitation

_____ Quantitation Limits

Overall Comments: _____

Definition of Qualifiers:

J- Estimated results

U- Compound not detected

R- Rejected data

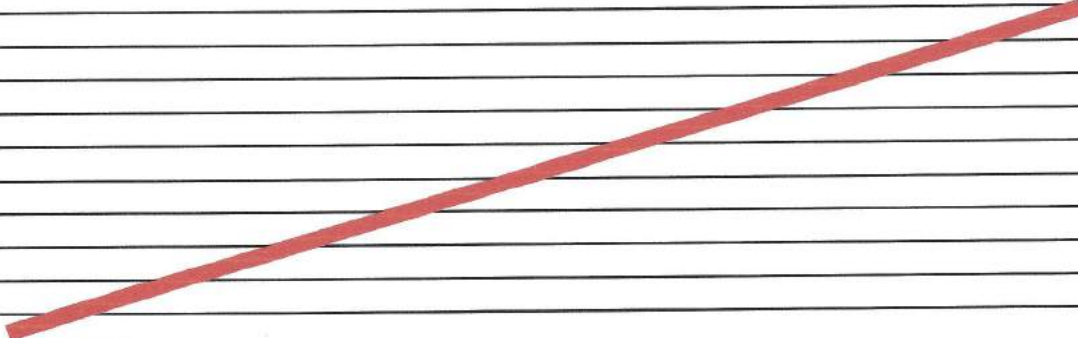
UJ- Estimated nondetect

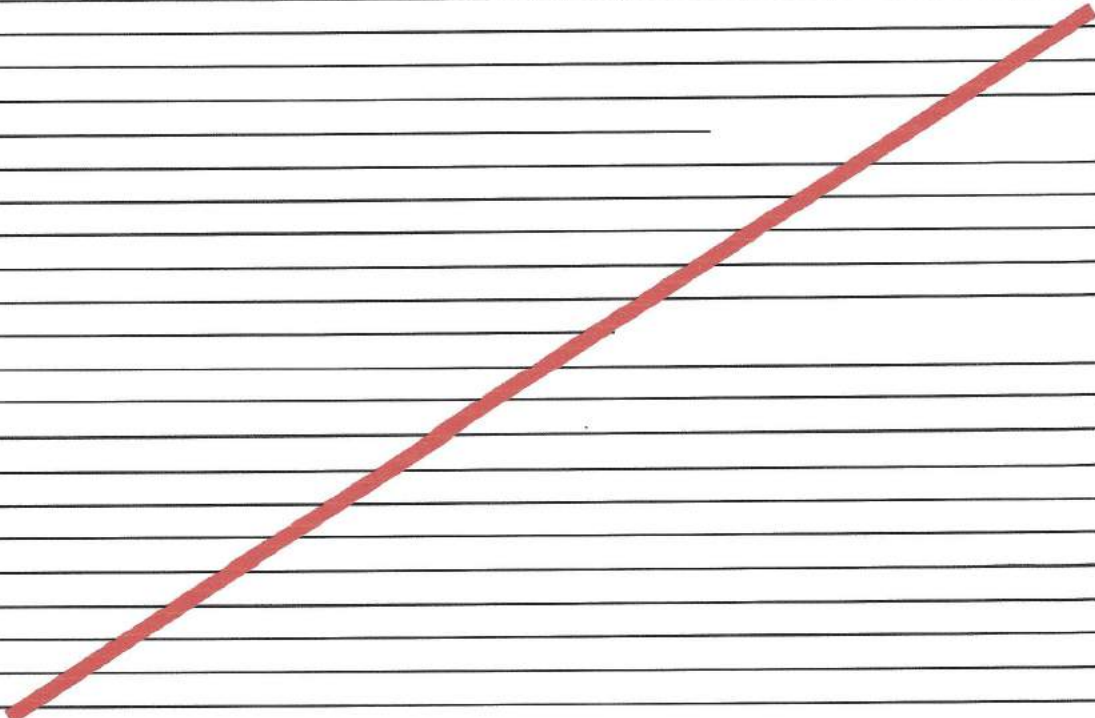
Reviewer: _____

Date: _____

All criteria were met _____
Criteria were not met and/or see below _____

I. DATA COMPLETNESS
A. Data Package:

<u>MISSING INFORMATION</u>	<u>DATE LAB. CONTACTED</u>	<u>DATE RECEIVED</u>
		

<u>Other</u>	<u>Discrepancies:</u>
	

All criteria were met _____
Criteria were not met and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of extraction, and subsequently from the time of extraction to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	ACTION

Criteria

Extraction HT: Aqueous extract within 7 days from sample collection, Soil: extract within 14 days.

Analysis HT: Aqueous and soil samples: analysis within 40 days from date of sample extraction.

Cooler temperature (Criteria: $4 \pm 2^{\circ}\text{C}$): _____

Actions: Qualify positive results/nondetects as follows:

If holding times are exceeded, estimate positive results (J) and nondetects (UJ).

If holding times are grossly exceeded, use professional judgment to qualify data. The data reviewer may choose to estimate positive results (J) and rejects nondetects (R).

If samples were not at the proper temperature ($> 10^{\circ}\text{C}$), use professional judgment to qualify the results.

All criteria were met _____
Criteria were not met and/or see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

_____ The DFTPP performance results were reviewed and found to be within the specified criteria. If ion abundance criteria were not met, use professional judgment to qualify results. If mass assignment is in error (e.g., m/z 199 as base peak instead of m/z 198), all associated data are rejected (R).

_____ All samples were analyzed within 12 hours of the DFTPP tuning. If no, use professional judgment to determine if qualification is appropriate.

List the samples affected: _____

All criteria were met X
Criteria were not met and/or see below

CALIBRATIONS VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:
Dates of continuing calibration:
Instrument ID numbers:
Matrix/Level:

DATE	LAB FILE ID#	ANALYTE	CRITERIA OUT RFs, %RSD, %D, r	SAMPLES AFFECTED

Criteria- ICAL

All RFs must be > 0.05 for all analytes.

All %RSD must be ≤ 15 or correlation coefficients (r) > 0.99 for all except: %RPDs $\leq 30\%$ for CCCs:

Base Neutral:	1,4-Dichlorobenzene	Fluoranthene	Acid:	Phenol
	Hexachlorobutadiene	Di-n-octyl-phthalate		2-Nitrophenol
	Acenaphthene	Benzo(a)pyrene		2,4-Dichlorophenol
	Diphenylamine ¹			4-Chloro-3-methylphenol

Criteria- CCAL

RFs \geq for SPCCs (N-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-nitrophenol, and 4-nitrophenol)

All percent differences (%Ds) must be $\leq 20\%$.

Actions:

If $RF < 0.05$, estimate positive results (J) and reject nondetects (R).

If %RSD $> 35\%$ for target compounds (> 30 for CCCs) or a correlation coefficient < 0.99 , estimate positive results (J) and use professional judgment to qualify nondetects.

If % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

A separate worksheet should be filled for each initial curve

¹ Cannot be separated from N-Nitrosodiphenylamine

All criteria were met ____
Criteria were not met and/or see below ____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
------------------	--------	------------------	----------	------------------------

Field/Trip/Equipment

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
------------------	--------	------------------	----------	------------------------

All criteria were met _____
Criteria were not met and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs of 10x the amount in the blank for the common contaminants (phthalates), or 5x the amount of any other compound. Specific actions area as follows:

If the concentration is < sample quantitation limit (SQL) and < AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but < AL, report the compound as not detected (U) at the reported concentration.

If the concentration is > AL, report the concentration unqualified.

All criteria were met _____
 Criteria were not met and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	BASE/NEUTRAL SURROGATE COMPOUND			ACTION
	NBZ	FBP	TPH	

QC Limits* (Aqueous)

_____ LL_to_UL_____ to _____ to _____ to _____

QC Limits* (Solid)

_____ LL_to_UL_____ to _____ to _____ to _____

SAMPLE ID	ACID SURROGATE COMPOUND			ACTION
	PHL	2FP	TBP	

QC Limits* (Aqueous)

_____ LL_to_UL_____ to _____ to _____ to _____

QC Limits* (Solid)

_____ LL_to_UL_____ to _____ to _____ to _____

NBZ = Nitrobenzene-d5
 FBP = 2-Fluorobiphenyl
 TPH = Terphenyl-d14

PHL = Phenol-d5
 2FP = 2-Fluorophenol
 TBP = 2,4,6-Tribromophenol

* Surrogate recoveries must fall between laboratory QC limits. If any surrogate is out of QC limits, there should be reanalysis to confirm that the noncompliance is due to sample matrix effects rather than laboratory deficiencies.

Actions:

Data are not qualified unless two or more surrogate %Rs within the same fraction (base/neutral or acid) are out of specification but > 10% or one surrogate %R within the same fraction < 10%. If surrogate %Rs are outside QC limit due to dilution, use professional judgment to qualify sample data. Surrogate action should be applied as follow:

QUALIFY RESULTS WITHIN THE SAME FRACTION (BASE/NEUTRAL OR ACID)	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

All criteria were met _____
Criteria were not met and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples.

MS/MSD Recoveries and Precision Criteria

Sample ID: _____

Matrix/Level: _____

List the %Rs, RPD of the compounds which do not meet the QC criteria.

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION

No action is taken on MS/MSD results alone to qualify the entire case. However, used informed professional judgment, the data reviewer may use the MS/MSD results in conjunction with other QC criteria and determine the need for some qualification of the data. In those instances where it can be determined that the results of the MS/MSD affect only the sample spiked, the qualification should be limited to this sample alone. However, it may be determined through the MS/MSD results that the laboratory is having a systematic problem in the analysis of one or more analytes, which affects the associated samples.

All criteria were met _____
Criteria were not met and/or see below _____

2. MS/MSD – Unspiked Compounds

List the concentrations of the unspiked compounds and determine the % RSDs of these compounds in the unspiked sample, matrix spike, and matrix spike duplicate.

COMPOUND	CONCENTRATION SAMPLE	MS	MSD	%RPD	ACTION

Criteria: None specified, use $\%RSD \leq 50$ as professional judgment.

Actions:

If the $\%RSD > 50$, qualify the results in the spiked sample as estimate (J).

If the $\%RSD$ is not calculable (NC) due to nondetect value in the sample, MS, and/or MSD, use professional judgment to qualify sample data.

A separate worksheet should be used for each MS/MSD pair.

All criteria were met _____
Criteria were not met and/or see below _____

VIII. LABORATORY CONTROL SAMPLE (LCS/LCSD) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT	ACTION
--------	----------	-----	----------	--------

Criteria:

- * Use laboratory QC limits (LL = lower limit, UL = upper limit).
- * Refer to QAPP for specific criteria.

Actions:

Actions on LCS recovery should be based on both the number of compounds that are outside the %R criteria and the magnitude of the exceedance of the criteria.

If the %R of the analyte is > UL, qualify all positive results (J) for the affected analyte in the associated samples and accept nondetects.

If the %R of the analyte is < LL, qualify all positive results (J) and reject (R) nondetects for the affected analyte in the associated samples.

If more than half the compounds in the LCS are not within the required recovery criteria, qualify all positive results as (J) and reject nondetects (R) for all target analyte(s) in the associated samples.

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix (1 per 20 samples per matrix)? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected. Discuss the actions below:

All criteria were met _____
Criteria were not met and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs: _____

Matrix: _____

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which measures only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Criteria:

The project QAPP should be reviewed for project-specific information.
RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples if results are \geq SQL.
If both samples and duplicate are < 5 SQL, the RPD criteria is doubled.

SQL = soil quantitation limit

Actions:

If both the sample and the duplicate results are nondetects (ND), the RPD is not calculable (NC). No action is needed.

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria.

If one sample result is not detected and the other is ≥ 5 x the SQL qualify (J/UJ).

Note: If SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is < 5 x the SQL, use professional judgment to determine if qualification is appropriate.

All criteria were met _____
Criteria were not met and/or see below _____

IX. LABORATORY DUPLICATE PRECISION

Sample IDs: _____

Matrix: _____

Laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which measures only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Criteria:

The project QAPP should be reviewed for project-specific information.
RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples if results are \geq SQL.
If both samples and duplicate are < 5 SQL, the RPD criteria is doubled.

SQL = soil quantitation limit

Actions:

If both the sample and the duplicate results are nondetects (ND), the RPD is not calculable (NC). No action is needed.

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria.

If one sample result is not detected and the other is ≥ 5 x the SQL qualify (J/UJ).

Note: If SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is < 5 x the SQL, use professional judgment to determine if qualification is appropriate.

All criteria were met _____
Criteria were not met and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area and/or retention times (RT) which do not meet the criteria for IS performance.

DATE	SAMPLE ID	IS OUT	IS AREA/RT	ACCEPTABLE RANGE	ACTION
------	-----------	--------	---------------	---------------------	--------

Criteria:

- * IS area of +100% or -50% of the IS area in the associated calibration standard (CCAL).
- * Retention time (RT) within 30 seconds of the IS area in the associated calibration standard (CCAL).

Actions:

If an IS is outside the QC limit, it is recommended reanalysis to confirm that the noncompliance is due to sample matrix effects rather than laboratory differences.

Validation actions should be applied to compounds quantitated with the out of control IS as follows:

QUALITY	IS AREA < - 10%	IS AREA = -10 % TO - 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction. Discuss actions below:

All criteria were met _____
Criteria were not met and/or see below _____

XI. COMPOUND IDENTIFICATION

The compound identification evaluation is to verify that the laboratory correctly identified target analytes as well as tentatively identified compounds (TICs).

1. Verify that the target analytes were within the retention time windows.

Verify that the quantitation of the target analytes and/or TICs using the correct internal standards.

If target analytes and/or TICs were not correctly identified, request that the laboratory resubmit the corrected data.

All criteria were met _____
Criteria were not met and/or see below _____

XII. QUANTITATION LIMITS AND SAMPLE RESULTS

The sample quantitation evaluation is to verify laboratory quantitation results.

1. In the space below, please show a minimum of one sample calculation:
2. If requested, verify that the results were above the laboratory method detection limit (MDLs).
3. If dilutions performed, were the SQLs elevated accordingly by the laboratory? List the affected samples and dilution factor in the table below.

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
BEL-1305093	100 X	Matrix interference

If dilution was not performed, estimate results (J) for the affected compounds. List the affected samples/compounds:

Project Number: _____

Date: _____

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8260B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _____ data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: _____ Sample matrix: _____

No. of Samples: _____

Trip blank No.: _____

Field blank No.: _____

Equipment blank No.: _____

Field duplicate No.: _____

_____ Data Completeness
_____ Holding Times
_____ GC/MS Tuning
_____ Internal Standard Performance
_____ Blanks
_____ Surrogate Recoveries
_____ Matrix Spike/Matrix Spike Duplicate

_____ Laboratory Control Spikes
_____ Field Duplicates
_____ Calibrations
_____ Compound Identifications
_____ Compound Quantitation
_____ Quantitation Limits

Overall Comments: _____

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer: _____ Date: _____

MISSING INFORMATION

DATE RECEIVED

DATE RECEIVED

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

All criteria were met _____
Criteria were not met _____
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION

Criteria

Aqueous samples – 14 days from sample collection for preserved samples ($\text{pH} \leq 2$, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C , no air bubbles.

Soil samples- 14 days from sample collection.

Cooler temperature (Criteria: $4 \pm 2^{\circ}\text{C}$):

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimate positive results (J) and nondetects (UJ).

If the % solid of soil samples is $< 10\%$, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted ($> 10^{\circ}\text{C}$), estimate positive results (J) and nondetects (UJ).

All criteria were met _____
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

_____ The BFB performance results were reviewed and found to be within the specified criteria.

_____ BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected: _____

If mass calibration is in error, all associated data are rejected.

All criteria were met _____
Criteria were not met _____
and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration: _____
Dates of continuing calibration: _____
Instrument ID numbers: _____
Matrix/Level: _____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be $\leq 15\%$ regardless of method requirements for CCC.

All %Ds must be $\leq 20\%$ regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05 , estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD $> 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and reject nondetects (R).

If any compound has a % D $> 20\%$, estimate positive results (J) and nondetects (UJ).

If any compound has a % D $> 90\%$, estimate positive results (J) and reject nondetects (R).

If any compound has $r > 0.995$, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met _____
 Criteria were not met _____
 and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

All criteria were met _____
 Criteria were not met _____
 and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and $>$ AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met _____
 Criteria were not met _____
 and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND				ACTION
	1,2-DCA	DBFM	TOL-d8	BFB	

QC Limits* (Aqueous)

LL to UL to to to to

QC Limits* (Solid-Low)

LL to UL to to to to

QC Limits* (Solid-Med)

LL to UL to to to to

1,2-DCA = 1,2-Dichloromethane-d4

TOL-d8 = Toluene-d8

DBFM = Dibromofluoromethane

BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met _____
 Criteria were not met _____
 and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID: _____

Matrix/Level: _____

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
=====					

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).
 If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).
 If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%,
 qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID: _____ Matrix/Level/Unit: _____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION
----------	--------------	----------	-----------	-------	--------

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

Actions:

- * If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met _____
Criteria were not met _____
and/or see below _____

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (J) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met _____
Criteria were not met _____
and/or see below _____

IX. LABORATORY DUPLICATE PRECISION

Sample IDs: _____

Matrix: _____

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _____
Criteria were not met _____
and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs: _____

Matrix: _____

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _____
Criteria were not met _____
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- | | | |
|---|--|-----------|
| * | Area of +100% or -50% of the IS area in the associated calibration standard. | |
| * | Retention time (RT) within 30 seconds of the IS area in the associated calibration | standard. |

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
------	-----------	--------	---------	------------------	--------

[illegible]

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO - 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were met _____
Criteria were not met _____
and/or see below _____

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

All criteria were met _____
Criteria were not met _____
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

B. Percent Solids

List samples which have ≤ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is $< 10\%$, estimate positive results (J) and reject nondetects (R)

APPENDIX B

Laboratory Results

Sample Description: MW11D-W01 Grab Groundwater

CAF GW Monitoring Well Construction Project

LL Sample # WW 8049491

LL Group # 1593287

Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 11:14 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/16/2015 10:00

150 Sector Central

Reported: 09/28/2015 16:23

Cardina PR 00979

CA11D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	31 J	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 12:12	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 12:12	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 12:04	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*-This limit was used in the evaluation of the final result

Sample Description: MW11S-W01 Grab Groundwater

CAF GW Monitoring Well Construction Project

LL Sample # WW 8049492

LL Group # 1593287

Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 11:34 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/16/2015 10:00

150 Sector Central

Reported: 09/28/2015 16:23

Cardina PR 00979

CA11S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l N.D.	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 620	ug/l 30	ug/l 94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/17/2015 23:05	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/17/2015 23:05	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 17:32	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW9D-W01 Grab Groundwater

CAF GW Monitoring Well Construction Project

LL Sample # WW 8049493

LL Group # 1593287

Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 12:12 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/16/2015 10:00

150 Sector Central

Reported: 09/28/2015 16:23

Cardina PR 00979

CA09D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l N.D.	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 200	ug/l 30	ug/l 94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/17/2015 23:32	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/17/2015 23:32	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 12:26	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*—This limit was used in the evaluation of the final result

Sample Description: Field Blank Composite Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049494
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 09:35 by DP Caribbean Airport Facilities
through 09/15/2015 15:30 Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CAFBK

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	N.D.	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/17/2015 16:14	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/17/2015 16:14	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 11:42	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW3S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049495
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 14:57 by DP Caribbean Airport Facilities

Suite 3

Submitted: 09/16/2015 10:00

150 Sector Central

Reported: 09/28/2015 16:23

Cardina PR 00979

CA03S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l N.D.	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 48 J	ug/l 30	ug/l 95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/18/2015 00:00	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/18/2015 00:00	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 12:48	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW5D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049496
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 15:21 by DP Caribbean Airport Facilities

Suite 3

Submitted: 09/16/2015 10:00

150 Sector Central

Reported: 09/28/2015 16:23

Cardina PR 00979

CA05D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l 24 J	ug/l 20	ug/l 50	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/18/2015 00:27	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/18/2015 00:27	Brett W Kenyon	1



*=This limit was used in the evaluation of the final result

Sample Description: MW5S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049497
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 15:26 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/16/2015 10:00

150 Sector Central

Reported: 09/28/2015 16:23

Cardina PR 00979

CA05S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	67 J	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/18/2015 00:54	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/18/2015 00:54	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 13:10	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW5S-W01D Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049498
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 15:29 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CA5SD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	41 J	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/18/2015 01:21	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/18/2015 01:21	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 13:32	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: Equipment Blank Composite Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049499
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 08:41 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/16/2015 10:00

150 Sector Central

Reported: 09/28/2015 16:23

Cardina PR 00979

CAEBK

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	240	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/17/2015 16:41	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/17/2015 16:41	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 13:53	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW8D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049500
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 09:39 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CA08D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l N.D.	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 100	ug/l 30	ug/l 94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/17/2015 17:36	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/17/2015 17:36	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 16:05	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW8D-MS Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049501
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 09:41 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CA08D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l 1,200	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 1,200	ug/l 30	ug/l 94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/17/2015 18:03	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/17/2015 18:03	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 16:26	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW8D-MSD Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049502
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 09:43 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CA08D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l 1,200	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 1,200	ug/l 30	ug/l 95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/17/2015 18:31	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/17/2015 18:31	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 16:48	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW8S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049503
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 09:53 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CA08S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	GC Volatiles	SW-846 8015B	ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
	GC Petroleum Hydrocarbons	SW-846 8015B	ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	N.D.	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 13:07	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 13:07	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 14:15	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: Trip Blank Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049504
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 08/26/2015

Caribbean Airport Facilities

Suite 3

Submitted: 09/16/2015 10:00

150 Sector Central

Reported: 09/28/2015 16:23

Cardina PR 00979

CATBK

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l N.D.	ug/l 20	ug/l 50	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15260A20A	09/17/2015 17:09	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15260A20A	09/17/2015 17:09	Brett W Kenyon	1



*=This limit was used in the evaluation of the final result

Sample Description: MW9S-W01 Grab Groundwater

CAF GW Monitoring Well Construction Project

LL Sample # WW 8049505

LL Group # 1593287

Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 13:42 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/16/2015 10:00

150 Sector Central

Reported: 09/28/2015 16:23

Cardina PR 00979

CA09S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	n.a.	N.D.	100	250	5
Reporting limits were raised due to sample foaming.						
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	n.a.	400	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15267A20A	09/25/2015 11:55	Jeremy C Giffin	5
01146	GC VOA Water Prep	SW-846 5030B	1	15267A20A	09/25/2015 11:55	Jeremy C Giffin	5
08269	TPH-DRO water C10-C28	SW-846 8015B	2	152620014A	09/22/2015 17:10	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW10D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049506
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 14:09 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CA10D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l N.D.	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 47 J	ug/l 30	ug/l 95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 14:01	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 14:01	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 14:37	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*-This limit was used in the evaluation of the final result

Sample Description: MW10S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049507
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 14:17 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CA10S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l N.D.	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l N.D.	ug/l 30	ug/l 94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 14:29	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 14:29	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 14:59	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW3D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049508
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 14:45 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CA03D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	62 J	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 14:56	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 14:56	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 15:21	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW3D-W01D Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8049509
LL Group # 1593287
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/15/2015 14:47 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/16/2015 10:00 150 Sector Central
Reported: 09/28/2015 16:23 Cardina PR 00979

CA3DD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	58 J	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 15:24	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 15:24	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152620014A	09/22/2015 15:43	Nicholas R Rossi	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152620014A	09/21/2015 20:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result



Environmental Analysis Request/Chain of Custody

Acct. # 20530 Group # 1593287 Sample # 8049491-09

[illegible]



**Lancaster Laboratories
Environmental**

Acct. # _____

20530 Group # 1593287

Sample # 8049491-09

Environmental Analysis Request/Chain of Custody

[illegible]

For Lab Use Only									
Analyses Requested		Preservation Codes		Matrix		Total # of Containers		Remarks	
SF #:		SCR #:		Preservation Codes		Total # of Containers		Remarks	
SF #:		SCR #:		Preservation Codes		Total # of Containers		Remarks	
SF #:		SCR #:		Preservation Codes		Total # of Containers		Remarks	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄		P = H ₃ PO ₄		S = H ₂ SO ₄	
O = Other				O = Other				O = Other	
H = HCl		T = Thiourea		H = HCl		T = Thiourea		H = HCl	
N = HNO ₃		B = NaOH		N = HNO ₃		B = NaOH		N = HNO ₃	
S = H ₂ SO ₄		P = H<							

Sample Description: Equipment Blank 1 Composite Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051111
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 07:20 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/17/2015 10:10

150 Sector Central

Reported: 09/28/2015 16:57

Cardina PR 00979

CAEB1

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	41 J	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 11:17	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 11:17	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 13:41	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW4D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051112
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 07:48 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/17/2015 10:10 150 Sector Central
Reported: 09/28/2015 16:57 Cardina PR 00979

CAM4D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	36 J	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 17:41	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 17:41	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 14:03	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW4S-W01 Grab Groundwater

CAF GW Monitoring Well Construction Project

LL Sample # WW 8051113

LL Group # 1593616

Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 07:54 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/17/2015 10:10

150 Sector Central

Reported: 09/28/2015 16:57

Cardina PR 00979

CAM4S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	GC Volatiles	SW-846 8015B	ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	100	250	5
	Reporting limits were raised due to sample foaming.					
	GC Petroleum Hydrocarbons	SW-846 8015B	ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	3,600	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15267A20A	09/25/2015 12:18	Jeremy C Giffin	5
01146	GC VOA Water Prep	SW-846 5030B	1	15267A20A	09/25/2015 12:18	Jeremy C Giffin	5
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 19:14	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*This limit was used in the evaluation of the final result

Sample Description: MW2D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051114
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 10:33 by DP Caribbean Airport Facilities

Suite 3

Submitted: 09/17/2015 10:10

150 Sector Central

Reported: 09/28/2015 16:57

Cardina PR 00979

CAM2D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l 25 J	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 75 J	ug/l 30	ug/l 95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 18:36	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 18:36	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 14:26	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: Trip Blank Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051115
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 08/26/2015

Caribbean Airport Facilities

Suite 3

Submitted: 09/17/2015 10:10

150 Sector Central

Reported: 09/28/2015 16:57

Cardina PR 00979

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15264A20A	09/22/2015 11:44	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15264A20A	09/22/2015 11:44	Brett W Kenyon	1



*=This limit was used in the evaluation of the final result

Sample Description: MW2S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051116
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 10:44 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/17/2015 10:10 150 Sector Central
Reported: 09/28/2015 16:57 Cardina PR 00979

CAM2S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l N.D.	ug/l 100	ug/l 250	5
Reporting limits were raised due to sample foaming.						
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 410	ug/l 31	ug/l 95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15267A20A	09/25/2015 12:40	Jeremy C Giffin	5
01146	GC VOA Water Prep	SW-846 5030B	1	15267A20A	09/25/2015 12:40	Jeremy C Giffin	5
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 17:45	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: Equipment Blank 2 Composite Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051117
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 16:00 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/17/2015 10:10

150 Sector Central

Reported: 09/28/2015 16:57

Cardina PR 00979

CAEB2

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	N.D.	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/23/2015 20:09	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/23/2015 20:09	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 12:35	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW7S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051118
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 16:22 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/17/2015 10:10

150 Sector Central

Reported: 09/28/2015 16:57

Cardina PR 00979

CAM7S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	410	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/23/2015 22:26	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/23/2015 22:26	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 18:07	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW7D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051119
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 16:38 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/17/2015 10:10 150 Sector Central
Reported: 09/28/2015 16:57 Cardina PR 00979

CAM7D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	570	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/23/2015 22:53	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/23/2015 22:53	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 18:29	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*--This limit was used in the evaluation of the final result

Sample Description: MW6S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051120
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 16:59 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/17/2015 10:10 150 Sector Central
Reported: 09/28/2015 16:57 Cardina PR 00979

CAM6S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	270	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/23/2015 23:20	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/23/2015 23:20	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 18:52	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: Field Blank Composite Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051121
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 07:10 by DP Caribbean Airport Facilities
through 09/16/2015 17:02 Suite 3
Submitted: 09/17/2015 10:10 150 Sector Central
Reported: 09/28/2015 16:57 Cardina PR 00979

CAFB-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	N.D.	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/23/2015 20:37	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/23/2015 20:37	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 12:57	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW1D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051122
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 11:12 by DP Caribbean Airport Facilities

Suite 3

Submitted: 09/17/2015 10:10

150 Sector Central

Reported: 09/28/2015 16:57

Cardina PR 00979

CAM1D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l 26 J	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 41 J	ug/l 30	ug/l 94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/23/2015 23:48	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/23/2015 23:48	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 13:19	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW1S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051123
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 11:20 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/17/2015 10:10 150 Sector Central
Reported: 09/28/2015 16:57 Cardina PR 00979

CAM1S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l N.D.	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 140	ug/l 30	ug/l 94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/24/2015 00:15	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/24/2015 00:15	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 16:16	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW6D-W01 Grab Groundwater

CAF GW Monitoring Well Construction Project

LL Sample # WW 8051124

LL Group # 1593616

Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 13:00 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/17/2015 10:10

150 Sector Central

Reported: 09/28/2015 16:57

Cardina PR 00979

CAM6D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l 23 J	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 95	ug/l 30	ug/l 94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/23/2015 18:20	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/23/2015 18:20	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 14:48	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW6D-MS Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051125
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 13:02 by DP Caribbean Airport Facilities
Suite 3
Submitted: 09/17/2015 10:10 150 Sector Central
Reported: 09/28/2015 16:57 Cardina PR 00979

CAM6D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	SW-846 8015B		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	1,100	20	50	1
GC Petroleum Hydrocarbons	SW-846 8015B		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	1,100	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/23/2015 18:47	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/23/2015 18:47	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 15:10	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

Sample Description: MW6D-MSD Grab Groundwater
CAF GW Monitoring Well Construction Project

LL Sample # WW 8051126
LL Group # 1593616
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Initial Sampling)

Collected: 09/16/2015 13:03 by DP

Caribbean Airport Facilities

Suite 3

Submitted: 09/17/2015 10:10

150 Sector Central

Reported: 09/28/2015 16:57

Cardina PR 00979

CAM6D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles						
01635	TPH-GRO water C6-C10	SW-846 8015B n.a.	ug/l 1,100	ug/l 20	ug/l 50	1
GC Petroleum Hydrocarbons						
08269	TPH-DRO water C10-C28	SW-846 8015B n.a.	ug/l 1,200	ug/l 30	ug/l 95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15265A20A	09/23/2015 19:14	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15265A20A	09/23/2015 19:14	Brett W Kenyon	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	152650021A	09/23/2015 15:32	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	152650021A	09/22/2015 19:00	Samantha L Bronder	1



*=This limit was used in the evaluation of the final result

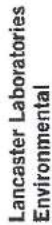


Acct. # 20530 Group # 1593616 Sample # 8051111 -26

Environmental Analysis Request/Chain of Custody

[illegible]

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300



Environmental Analysis Request/Chain of Custody

Accd. # 20530 Group # 1593616 Sample # 805111-26

[illegible]